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# POSSIBLE EFFECTS ON THE NORTH VIETNAMESE WAR EFFORT OF INTERDICTION OF ROUTES BETWEEN NORTH VIETNAM AND COMMUNIST CHINA AND ROUTES NORTH AND SOUTH OF HANOI

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## Summary and Conclusions

The railroads connecting Communist China with North Vietnam are the most important logistic links for the movement of military supplies to North Vietnam. The chief route connects with the Chinese railroad system at P'ing-hsiang in Kwangsi Province, enters North Vietnam at Dong Dang, leads to Hanoi, and thence connects with the railroad line which enters Yunnan Province through Lao Cai. There is no connection between the railroads in Yunnan Province and the main network of China except through North Vietnam. Military supplies and equipment from China enter North Vietnam at both Dong Dang and Lao Cai, but the route through Dong Dang is estimated to carry the bulk of the military traffic.

The movement of military supplies by railroad is probably supplemented to a small extent by use of the several roads which lead from China to North Vietnam. Some military cargoes also arrive at Haiphong, the major port and also possibly at some of the minor ports from Canton-Whampoa, Fort Bayard, and Hainan Island in China. But very little hard evidence is available to support this thesis. From Haiphong, military supplies are distributed by rail and truck from Haiphong to Hanoi, or are sent to the south including South Vietnam directly by sea.

In the event that traffic over Dong Dang - Hanoi, Lao Cai - Hanoi, and Haiphong - Hanoi railroad lines were impeded by bombing, alternative means of transport (principally truck but also some inland waterways) would be available. To impede further, therefore, the movement of military supplies it would be necessary

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to bomb road bridges and attack trucks moving over the roads. Experience in World War II, the Korean War and thus far in our air attacks on transportation in North Vietnam, however, has shown that it is impossible to halt the flow of vital war material. Additional attack on rail, road and sea transportation in North Vietnam would only make more difficult the movement of military supplies, but would effect significantly the modern industrial sector of the economy. The livelihood of the bulk of the population in North Vietnam, however, is still derived from agriculture.

Air attacks on the railroads and roads north of Hanoi and between Hanoi and Haiphong would produce far greater difficulties for the war effort of North Vietnamese than would additional attacks on these facilities to the south. To the north and east of Hanoi are the transport facilities that not only support the movement of military supplies from China, but also support the economy. Far greater affect on military as well as economic movements would be felt. Distances over which both military and economic traffic would have to be moved over a disrupted system would be greater. The area to the south of Hanoi is of relatively little economic importance, and the military supplies moved into and through this area are those which have been stockpiled in the area or which have been moved freely to the area from China or from elsewhere in North Vietnam.

I. Introduction

The transport system of North Vietnam (NVN) is situated and organized in such a way that neutralization of a few key facilities could

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interrupt* modern transportation. The rail lines all converge at one center with no alternate rail facilities available for any one of the lines. The country has only one major port for handling large amounts of imports of general cargo and petroleum in bulk. The road system is poor and trucks and gasoline are scarce. The inland water system is underdeveloped and the country has comparatively few ships for

* It must be borne in mind that the destruction of rail and road bridges probably would not halt traffic completely for more than a short period of time, because traffic can be carried around the breaks by the use of ferries or other expedients. Such destruction would, however, seriously impede traffic until the bridges were repaired. Essential quantities of war material would, therefore, continue to flow, unless troops actually occupied a given area to cut off the flow. For example, the required amounts of military supplies apparently are still moving to the southern part of North Vietnam in spite of extensive bombing of transport equipment and facilities in the area.





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inland and coastal water transportation. If certain routes in NVN could be interdicted* for long periods, therefore, North Vietnam's war effort might be affected considerably. 25X1

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II. Routes Linking North Vietnam and Communist China

A. Railroads

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meter-gauge lines converging at Hanoi as follows: 1) Dong Dang to Hanoi, which connects with the main, standard-gauge network of China at P'ing-hsiang, 2) Haiphong, the only major seaport in North Vietnam, to Hanoi and 3) Lao Cai to Hanoi, which connects with the Chinese meter-gauge network in Yunnan Province. There is no direct connection between the Chinese meter-gauge network in Yunnan and the main network in China. Almost all international freight and passenger traffic carried by land transportation between North Vietnam and China and between the USSR and North Vietnam moves on the Dong Dang-Hanoi line. At the end of 1964, it is estimated that all types of freight moving from China into North Vietnam on this line amounted to about 1,200 to 1,500 metric tons (mt) per day

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The total capacity of the Dong Dang-Hanoi line is estimated to be about 3,000 mt each way per day.

The Haiphong-Hanoi line serves as a main transport route for North Vietnamese imports and exports moving through the port of Haiphong. Some Chinese transit traffic also moves between Haiphong and Yunnan on this line. The Lao Cai-Hanoi line serves the major industrial centers of Viet Tri and Lam Thao, about 20 kilometers west of Viet Tri, and the major apatite mines near Lao Cai, as well as being the only route over which all Chinese transit traffic moves through North



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Vietnam. The volume of traffic on the Haiphong-Hanoi and Lao Cai-Hanoi lines probably is somewhat larger than that on the Dong Dang-Hanoi line. The capacity of these two lines is estimated to be at least as high as the Dong Dang-Hanoi line and probably higher.

In addition, North Vietnam has two other railroad lines in the main network. One of these lines connects the iron and steel complex at Thai Nguyen with the Lao Cai-Hanoi line and the other connected Vinh and Hanoi prior to US bombing. Through rail service on the Hanoi-Vinh line, however, has not been possible south of the 20th Parallel since the destruction of the Dong Phong Thuong railroad and highway bridge in early April. Since that time, rail traffic to the southern part of North Vietnam probably moves from Hanoi to Ninh Binh from which it must be moved further south by other means of transportation. The combined volume of rail traffic on these two lines at the end of 1964 probably was only about 10 percent of the total rail performance in North Vietnam.

B. Roads

Route 1A, generally running parallel with the Dong Dang-Hanoi railroad line, is the most important road connecting China and Hanoi. The limiting section of this road has a capacity of about 800 mt per day during the dry season and about 200 mt during the wet season. An alternate road system through Mong Cai, via Cao Bang, in conjunction with route 1A increases the capacity (for all roads from Kwangsi, China, to Hanoi) to a total of ~~1,800~~ 1,300 mt per day during the dry season and ~~450~~ 550 mt during the wet season.

The road between Haiphong and Hanoi has a through capacity of 1,050 mt per day during the dry season and 450 mt during the wet season. There is only one through road between Lao Cai and Hanoi. This road has a limiting section with a capacity of only 500 mt per day during the dry season and which is not capable of supporting trucks during the wet season. Route 6, located west of the Lao Cai-Hanoi rail line, also connects Yunnan with Hanoi. The capacity of the limiting section of this road is about 500 mt per day during the dry season and 100 mt during the wet season.

C. Haiphong and Other Ports

North Vietnam has one principal port, Haiphong, and two secondary ports, Cam Pha Port and Hon Gai. These three ports are the only ones that can accommodate oceangoing vessels. In addition to these three, there are 10 minor ports that are relatively unimportant.

1. Haiphong

North Vietnam's principal port is estimated to have handled about 800,000 mt of seaborne cargoes in each direction in 1964, which approached its estimated capacity for dry cargo. Haiphong is located on the southern bank of the Cua Cam, about 16 kilometers upstream from the Gulf of Tonkin. At least six Liberty-size ships can be accommodated at its docks simultaneously, and an equal number loaded or unloaded by lighters while anchored in the stream. Petroleum tankers dock at the former Shell Petroleum pier which has at least two pipelines to carry petroleum to 3 storage areas having tanks with a total capacity estimated to be about 30,000 mt.



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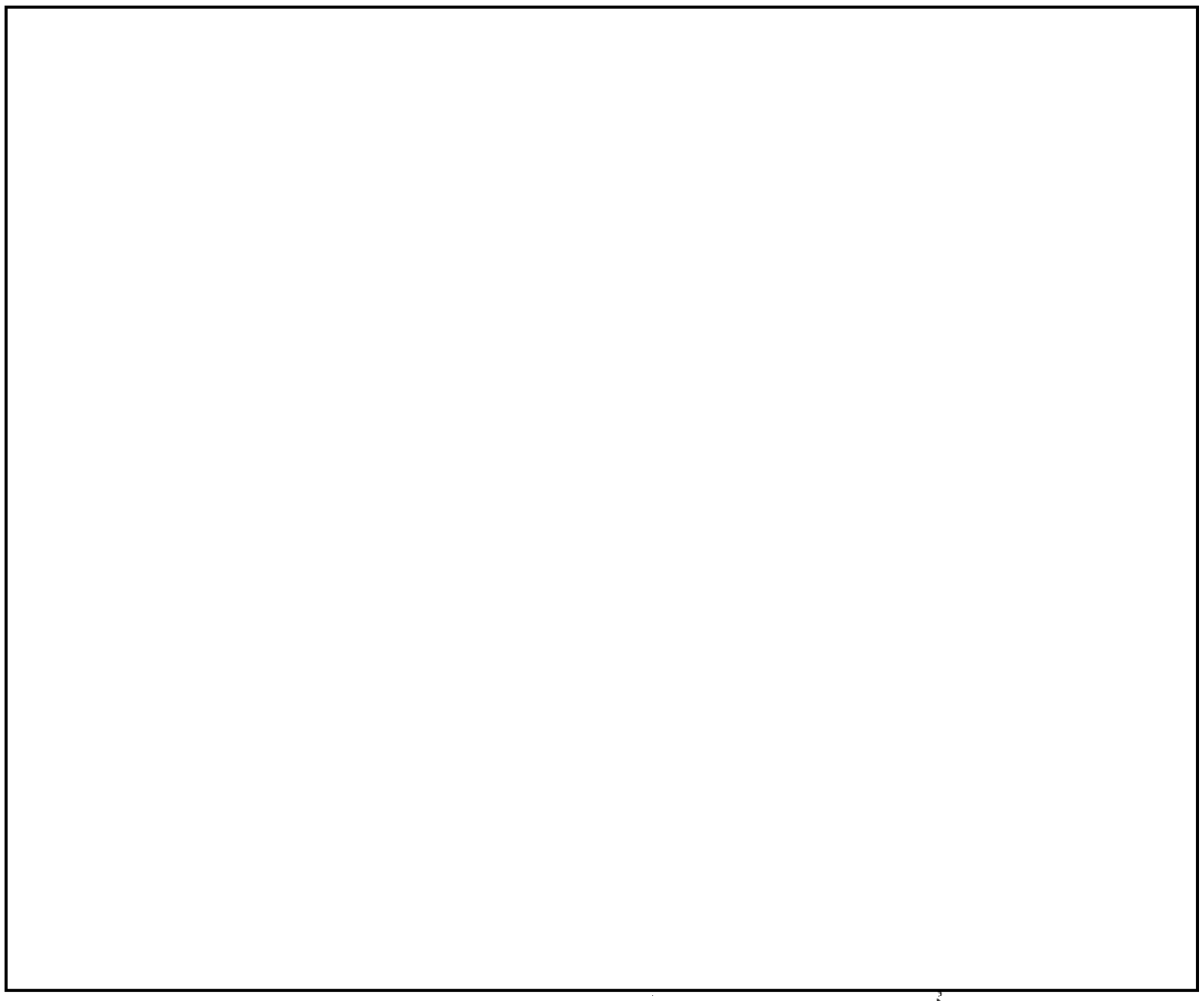
The total capacity of the port for the receipt of petroleum in bulk is estimated to be nearly 300,000 mt per year.





2. Cam Pha Port and Hon Gai

Both of these ports are especially equipped to export coal and have very limited facilities for handling other types of cargo. It is believed that exports from these ports added together totalled about 1.2 million to 1.3 million mt in 1964, of which about 25 percent went to China. The ports are connected to nearby mines by meter-gauge rail lines, but are not connected to the main rail system. Both ports are connected by highway route 18 with the main road network.

Trafficability of route 18, however, is limited during the wet season because it traverses low-lying terrain which is subject to inundation.

3. Minor Ports

Do Son has an extensive exposed anchorage in the open roadstead for general cargo ships, but berthing facilities and wharves are limited. It has a petroleum pier and storage for about 3,000 mt at an airfield which is not in use. Ben Thuy has a fairway depth over the bar that limits the port to ships of about 5,000 GRT and under.

The remaining minor ports are generally limited in capacity because of either fairway or berthing restrictions.

D. Inland Waterways

The principal inland water routes in North Vietnam are the Song Thai Binh, which is connected by the Canal des Rapides to Hanoi, and by the Cua Cam to Haiphong;

and the Red River, which runs along the border with Communist China from Lung Po to Lao Cai and then flows through Hanoi and Nam Dinh to the Gulf of Tonkin. The Riviere Claire, a minor waterway, crosses the border with Communist China near Thanh Thuy and flows south through Viet Tri to the Red River. The Black River also crosses the Chinese border and flows to the Red River.

The Song Thai Binh is navigable to Cho Moi throughout the year by sampans. The Red River is navigable throughout the year by specially constructed craft of 5-ton capacity. The Riviere Claire is also navigable by small native craft year-round, and the Black River has only a low capacity throughout the year.

Waterway capacities have been estimated as shown below:

| Waterway | From | To | Capacity (Metric Tons Per Day) High Water | Low Water |
|---|---|---|---|---|
| Song Thai Binh | Bac Giang | Gulf of Tonkin | 2,270 | 450 |
| Red River | Lao Cai | Gulf of Tonkin | 1,810 | 45 |
| Riviere Claire | Viet Tri | Tuyen Quang | 230 | 23 |
| Black River | Muong Te | Van Yen | 23 | 23 |
| Black River | Van Yen | Red River | 1,810 | 23 |

E. Coastal Waterways

It is estimated that there are over 900 motor-powered and approximately 4,800 sailing junks operating in the waters off southern China (Hong Kong - Canton - Hainan area) and off the northern coasts of NVN. It is estimated that if one-third of the total junks available were diverted to foreign trade to handle NVN imports, they would have a capability of transporting up to 570,000 mt of cargo

annually, including POL in drums. With their shallow drafts the junks could move well inshore and thus minimize opportunities for detection and interception. These craft do not require port facilities for offloading, but can discharge their cargoes over the beach using small indigenous craft. Such cargoes would necessarily be limited to items which could be easily handled by these methods. The tonnage which these small craft could carry would be in addition to that moved to Haiphong and other ports by larger craft.



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## III. Effect of Interdiction of Various Routes

### A. Dong Dang-Hanoi Routes

The Dong Dang-Hanoi railroad line currently is the most important logistic supply line in North Vietnam. If this line were interdicted, the road system between Kwangsi and Hanoi could be used as an alternate for the transportation of supplies from China. The total capacity of this system is about ~~60~~ 75 percent of that for the railroad line during the dry season and about ~~15~~ 20 percent during the wet season. This capacity theoretically is large enough for the movement of goods





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currently being moved on the Dong Dang-Hanoi railroad line during the dry season, but not during the wet season. If combined railroad and highway bridges along the rail line are interdicted, however, the use of the road system as an alternate to the rail line would be hindered. Furthermore, the use of highway transportation would require additional trucks, spare parts, and fuel all of which must be imported and are in scarce supply. If the road system is interdicted in addition to the combined railroad and highway bridges, the capability of highway transportation as an alternate to the rail line would be further reduced and the major share of the current traffic would have to be shifted to sea transportation during the dry season as well as during the wet season. There is no inland water network that can serve as an alternate to the Dong Dang-Hanoi railroad line.

B. Haiphong - Hanoi Routes

If the rail line between Hanoi and Haiphong were interdicted, rail cargoes could be transferred to trucks on the road between the two cities. If the road were also interdicted, relatively large amounts of supplies could still move between the two cities over inland waterways during periods of high water. However, if the port of Haiphong could be interdicted it would have an important effect not only on normal North Vietnamese foreign trade, but probably also on the infiltration of supplies by sea into SVN, as Haiphong appears to be an embarkation point for such supplies.

The entrance to the port of Haiphong is from the Gulf of Tonkin through the lower reach of the Cua Nam Trieu and the Canal Maritime. The Canal Maritime

is about 3,900 feet long and 450-750 feet wide and probably is dredged to at least 26 feet. If the Canal Maritime could be effectively blocked, the harbor at Haiphong would be closed to oceangoing ships, because there would be no alternate routes to the port for craft with drafts of over 11 feet. Blocking the Canal Maritime would also cause silt to accumulate in the harbor at a rate faster than usual, and would, therefore, complicate the rehabilitation of the port. Small coastal vessels, lighters, and other craft that draw not over 11 feet could pass through the alternate river channels at high water. Consequently the only way that all traffic to and from Haiphong could be halted appears to be through the imposition of an effective inshore, as well as an offshore, naval blockade.

It is believed that the operation of the port would not be greatly hampered by the damage or destruction of port facilities, with the possible exception of the petroleum pier and the dredges. The area around the petroleum pier must be dredged before the arrival of each tanker at the pier. Destruction of the dredges would, therefore, interrupt the bulk supply of petroleum to Haiphong, because tankers would not be able to unload supplies at the petroleum pier. Petroleum in drums could, however, be lightered in but at much higher cost.

C. Lao Cai - Hanoi Routes

Only a small amount of supplies is estimated to be currently moving from Yunnan Province, China, into North Vietnam, and this route is considered to be less important than the Dong Dang - Hanoi and Haiphong - Hanoi routes. If both of the latter routes were interdicted, however, China still could supply North

Vietnam with military goods from Yunnan. This route would be much more difficult, however, because there is no railroad connection between Yunnan and the rest of China, and additional supplies to Yunnan would have to move within China by truck transportation.

The Lao Cai-Hanoi railroad line would be the primary means of supplying North Vietnam from Yunnan. If this line were interdicted, the road system (route 6 and the Lao Cai-Hanoi road) could be used as an alternate during the dry season and the Red River could be used during the wet season. The capacities of these alternates are about 30 to 60 percent of the capacity of the rail line. The capacities of the roads are extremely limited during the wet season as is the capacity of the Red River during the dry season.

D. Hanoi - Ninh Binh Routes

At present the rail line from Hanoi to the south leads to Nam Dinh and its use apparently ends at Ninh Binh, because of the destruction by bombing of bridges to the south. If this line were interdicted north of Ninh Binh, supplies could continue to move down Route 1A and other roads. If both roads and rail were interdicted, however, some supplies could continue to move south in the general area along the Song Day waterway and some supplies could be shifted to coastal water transportation.

IV. Relative Effects of Interdiction on Routes North and South of Hanoi*

Interdiction of routes north of Hanoi apparently would have a more serious effect on North Vietnamese ability to continue the war effort than interdiction of routes south of Hanoi. In general it appears that the farther north these routes are interdicted, the more costly it will be to the economy of NVN. If the rail line were interdicted at Dong Dang, military supplies moving by land destined for Communist forces in southern Laos and SVN would have to be trucked from Dong Dang to Ninh Binh** an additional 250 kilometers (km) for a total of 600 kilometers, compared with 350 km at present.*** If the rail line were interdicted at Dong Dang and also between Hanoi and Haiphong, supplies from Communist China destined for sea infiltration from Haiphong to SVN might have to move 250 km by roads or inland waterways rather than by rail.**** The number

* All figures approximate.
** Believed to be the southern terminal of the rail line in use at present.
*** Distance from Ninh Binh to Mu Gia Pass.
**** A more likely possibility would be that they would be moved along coastal waters from Communist China to Haiphong, unless these waters were also interdicted.

of trucks required to move supplies over these additional distances would increase considerably. It can be estimated that a continuous supply line would require about 120 trucks for every 100 tons of supplies to be moved a distance of 100 km.* For every 100 tons moved by road instead of rail from Dong Dang to Ninh Binh, therefore, about 300 more trucks would be required. The need for additional trucks would put a strain on the economy of NVN.

Interdiction of routes north of Hanoi would also stop the flow of supplies by land from foreign countries. Interdiction of lines south of Hanoi would not stop this flow into the country, although it would prevent its distribution to areas south of Hanoi.

* Assumes each truck carries an average of about 3 mt for a distance of about 60 km (100 miles) and an additional 25 percent required for replacements for trucks out for repairs and so on.